

App. No. 10/600,961
Amdt. dated April 4, 2005
Reply to Office action of March 23, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original). A method for increasing an input voltage of an integrated circuit, which comprises:

providing a charge pump with a first, a second, and a third capacitor connected to one another via a first switch, a second switch, a third switch, and a fourth switch;

cyclically connecting the capacitors to an input voltage and to ground, as follows:

in a first step, connecting the first capacitor and the second capacitor between the input voltage and ground, to precharge the first capacitor and the second capacitor to the input voltage;

in a second step, connecting the first capacitor and the second capacitor to one another, to the input voltage and to ground, to charge the second capacitor to a charge voltage corresponding to a ratio of a capacitance of the first capacitor to a capacitance of the second capacitor; and

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in a third step, connecting the second capacitor and the third capacitor to one another, to the input voltage and to ground, to charge the third capacitor to an output voltage higher than the input voltage.

Claim 2 (original). The method according to claim 1, which comprises choosing the ratio of the capacitance of the first capacitor to the capacitance of the second capacitor in dependence on an available area on the integrated circuit.

Claim 3 (original). The method according to claim 1, which comprises choosing the ratio of the capacitance of the first capacitor to the capacitance of the second capacitor in dependence on the output voltage to be increased.

Claim 4 (currently amended). The method according to claim 1, which comprises defining the ratio of the capacitance of the first capacitor to the capacitance of the second capacitor such that ~~a~~ the charge voltage on the second capacitor rises to approximately $4/3$ times the input voltage.

Claim 5 (original). The method according to claim 4, which comprises choosing the ratio of the capacitance of the first capacitor to the capacitance of the second capacitor to be between 1 and 2.

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Claim 6 (currently amended). The method according to claim 1, which comprises choosing capacitor ~~areas~~ sizes for the first and second capacitors in dependence on a usable current.

Claim 7 (currently amended). The method according to claim 1, which comprises setting capacitor ~~areas~~ sizes for the first and second capacitors such that an output voltage of $V_{pp} \geq 2.8$ V, with adequate current ratings, is obtained for ~~an~~ the input voltage of $V_{int} \leq 1.8$ V.

Claim 8 (original). An integrated circuit with a charge pump for increasing an input voltage, comprising:

a first capacitor, a second capacitor, and a third capacitor

a first switch, a second switch, a third switch, and a fourth switch for selectively connecting said first, second, and third capacitors to one another, to the input voltage, and to ground;

wherein said first switch, said second switch, said third switch, and said fourth switch are cyclically controlled such that:

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in a first step, said first capacitor and said second capacitor are each connected between the input voltage and ground, for precharging said first capacitor and said second capacitor to the input voltage;

in a second step, said first capacitor and said second capacitor are connected to one another and are connected to the input voltage and to ground, for charging said second capacitor to a charge voltage corresponding to a ratio of a capacitance of said first capacitor and said second capacitor; and

in a third step, said second capacitor and said third capacitor are connected to one another and are connected to the input voltage and to ground for charging said third capacitor to output voltage higher than the input voltage.

Claim 9 (original). The integrated circuit according to claim 8 configured to supply a memory circuit.

Claim 10 (original). The integrated circuit according to claim 9, wherein the memory circuit is a DRAM circuit.